

Saint Paul ATARI Computer Enthusiasts



An independent computer user group

M A Y 1 9 8 7

SPACE Meeting Friday, May 8 at 7:30pm
MAST Meeting Friday, May 15 at 7:30pm
At the Falcon Heights Community Center
2077 Larpenteur Avenue West

MAST Programmers Mtg. Monday, May 18 at 7:30pm
At First Minnesota Bank Building - second floor
Lexington and Larpenteur, in back of building

Bruce Haug	President	774-6226
Jim Schulz	Vice President	537-5442
	MAST Co-Chair	
	MAST Disk Librarian	
Bob Floyd	MAST Co-Chair	484-7576
	Newsletter Editor	
Joe Danko	SPACE Secretary	777-9500
Dan Stubbs	MAST Secretary	433-3708
Bob Siede	Treasurer	489-3982
Frank Haug	SPACE Disk Librarian	774-6226
Jim Siede	SPACE Paper Librarian	489-3982
Neil Palosaari	MAST Paper Librarian	646-1272

SPACE Bulletin Board 774-0135



Minnesota
Atari ST
SIG

Disclaimer

Published by the St. Paul ATARI Computer Enthusiasts (SPACE), an independent organization with no business affiliation with ATARI Corporation. Permission is granted to any similar organization with which SPACE exchanges newsletters to reprint material from this newsletter. We do, however, ask that credit be given to the authors and to SPACE. Opinions expressed are those of the authors and do not necessarily reflect the views of SPACE, MAST (Minnesota ATARI ST special interest group), club officers, club members or ATARI Corporation.

BYTES FROM THE PRES by Bruce Haug

There's a new BBS in Town !!! (612) 774-0135. CALL IT UP, follow the instructions. If you need help, TYPE "?". The BBS is "SPACE/MAST". As of today there are 27 users signed on. Call it up, sign on, tell us the bad points, and the good. What do you want on a BBS ??? So far there are downloads for the 8-bit, and message bases for both the 8-bit and the 520 ST.

If you want to upload ST programs to Jim Schulz, contact him first, & he will let you know where to upload them.

So far the people with ST's say the board is fast, the people with 8-bit ATARI'S say it is just as fast as the BBS program that is run on a 520 ST. If there is interest in a UPLOAD/DOWNLOAD section for the MAST 520 ST's, it can be added, at a later time. In the meantime, please use it for a message base. MAST news and SPACE news will be posted on the BBS before it gets to the newsletter. We will let you know on the BBS when the 520 ST BBS is installed and ready for uploads / downloads.

As of this date, I'm planning to attend the CES show in June. Hopefully I will come back with information on both the ST and the 8-bit Atari. If possible, I will try to line up some factory DEMO's for our meetings.

In July, SPACE will be 5 years old !!! BIRTHDAY CAKE COFFEE POP PRESENTS ??? COME TO THE MEETINGS. Help us plan the for the Celebration.

See you May 8TH or 15th.

SPACE ATARI USER GROUP MONTHLY MEETING FOR MARCH Recorded by Joe Danko, Secretary

1. Meeting called to order on April 10th at 7:30 PM by President Bruce Haug. Approximately 45 members present.

2. VICE-PRESIDENT's report and ATARI 8-bit news

ATARI 1200 baud modem will be available about May some time. Atari 80 column display adapter is said to be available from ATARI in June and will also include a parallel printer port that functions independent of the 80 columns. ATARI has made the 80 column driver available to many of the third-party software developers and will be releasing 80 column versions of ATARIWRITER and SILENT BUTLER. The list price will be \$79.95. Look for news from a scheduled conference on COMPUSERVE concerning the possibilities for the future of the 8-bit ATARI. ATARI is advertising the 65XE dedicated GAME MACHINE with a keyboard, light gun and versions of about every old 400/800/XL/XE game you can think of.

3. TREASURER'S REPORT

Income = \$756
Expenses = \$788 (\$344.50 for the MULTITECH 224EH modem)
Present balance is \$1487.

A discussion followed concerning cash flow relative to SPACE vs MAST. It was revealed that MAST spends, on the average, just under \$400 per month for DOM's.

4. SECRETARY'S REPORT

See the current newsletter.

5. DISK-OF-THE-MONTH

Bruce Haug described the current DOM contents featuring The FORTUNE-WHEEL puzzle editor.

The club has traded library disks with the MACE group in Michigan for about 25 new public domain disks for future release on our DOM.

6. NEWSLETTER EDITOR

The winner of the SPACE RUMOR CONTEST is Albert Werthhiemer. He wins a \$10 gift certificate from USER FRIENDLY ATARI DEALER and SERVICE CENTER. It looks like there are only 2 submissions for the MAST version of this contest both and are USER FRIENDLY/WIZARDS WORK employees.

Bob produced his first newsletter and is insisting on a deadline of the Monday 10 days prior to the next meeting for submission of input for the next newsletter.

7. PAPER LIBRARY

Jim Siede, Librarian, will no longer bring all of the magazine back copies to meetings. If any member needs old magazine issues, call Jim at home. His phone number is on the front of the newsletter. Jim will bring current newsletters and magazines.

8. BBS NEWS

The BBS is up and operational on the following configuration:

130XE
M10/1 MEG from ICD
1050 with US DOUBLER from ICD
R:TIME8 Clock/Calendar cartridge from ICD
MULTITECH 224EH 300/1200/2400 baud modem

The software is BBS EXPRESS running under SPARTADOS from ICD. Frank Haug is the creative genius behind the present operation and also the current SYSOP. The BBS phone number is 774-0135.

9. OFFERS AND DEALS

There are a number of 8-bit systems for sale by TAIG members as of mid-April. The club diskette mass purchase arrived prior to the April meeting and several members still have not picked up their purchases. Watch out, as some previous disks showed up with no diskette in the carrier. As this is written, the club's ATARI 850 interface should be available for sale to any member for a reasonable offer.

10. SERVICE PROBLEMS/INFORMATION

Can a UPRINT interface work with PRINTSHOP? Yes, but it will convert the ATASCII (155) carriage return to an ASCII (13). Your Obedient Servant suffered the grievous loss of his 800XL power supply while starting to write these minutes on Friday 4/24 and did not get it back up until Tuesday, 4/28. It seems that the power supply decided to start outputting some AC current instead of pure DC. I cannibalized an old cordless phone transceiver for a power supply and converted it to +5 volts but the transformer went up in smoke in the middle of these minutes. I next went down to ABC Electronics in Minneapolis in search of a new transformer and LOW AND BEHOLD found a brand new 800XL power supply for \$10. They also happen to have lots of ATARI power supplies for 400/800 computers and 810/1050/1020 peripherals. I also saw supplies for 5200's (11.9 volts DC) and what I think are supplies for ST devices (9.3 volts DC). So there, bad news and good news.

Several members are looking for a source of replacement KOALA PADS or ATARI TABLETS. PROTECTO mail order dealer had them advertised for \$19.95 but it proved to be a misprint and the actual price is \$39.95. Discussion by Glen Kirschermann about his old 810 which is real picky about which disks it wants to read. PROTECTO has a new catalog out now with many bargains in software. It had almost no hardware. Comb Co. is clearing out XEROX IBM PC 'kinda-likes' for \$600.

11. CORRESPONDANCE WITH OTHER ATARI CLUBS.

We were honored with another visit from Donald Nelson of Tacoma, Washington. Don described how his ATARI user group had held a special meeting just dealing with hardware upgrades.

12. DEMONSTRATIONS AND TUTORIALS

Don Nelson also demonstrated a Seattle-Puget Sound ATARI Computer Enthusiasts disk specializing in graphics and graphics utilities. This disk will be made available through our library. Joe Danko demo'd his hardware APRIL FOOL'S JOKE: an 800 with 288K of RAM. It has to use modified DOS's to use all of the memory but all of the necessary software comes with the upgrade info found on the CHAOS BBS in Lansing Mich. It is also compatible with the AXLOM RAMPOWER ramdisk software such as is used by SYNCALC and SYNFILE. The AXLOM mode is usable by unmodified MYDOS and MACHDOS. With SYNCALC there is 245K of spreadsheet available and with SYNFILE+ you can have upwards to 15,000 records accessible. This could be made available to interested members although the modification is not easy to accomplish. It all works ok except that files get scrambled sometimes when copying into the ramdisk with DOS 2.5.

The SPACE D.O.M.
By Frank Haug

Well, looks like its time for May flowers... which means hay-fever (sniff). Well, hopefully in the following month's we are looking at a change in the DOM and for the better as far as you are concerned. I'm not writing about that here however. So come to the meeting and learn all about it. And should you happen to have a (gasp) donation... please bring it along.

This Month is a blockbuster. There are three (yes three) disks for sale. First there is the picture disk from SPACE. (Not us, but Seattle Puget Sound). Many showed interest in this disk at the last meeting. Next is the PD Print Shop Icon Editor. Complete with Fills, Circles, etc. Hopefully I can scrounge up some doc's for it by the meeting.

Now the May 1987 Disk Of the Month:

DUNGEON - TGAME - a Basic Text adventure. Escape the Dungeon.
HIRISE.COM - GAME - Ride the elevators to the top avoid the saucer and the bird.
MONOPOLY - GAME - A classic game for up to 4 players. Uses keyboard commands. (Unless I can Modify it by Meeting time).
CURSIVE - UTIL - Print Cursive Banners on Printer. (Member written, believe it or Not.)

FOUND!!!!

Someone left a jean jacket at the last MAST meeting. Please come and identify and claim it at either the SPACE or MAST Meeting.

Ribbon Re-Inking - Larry Vanden Plas

The club can re-ink most printer ribbons (black) for a small fee. There is no longer a reason to use a faded ribbon!

Ribbons that can be re-inked are:

\$1.00/ribbon

- Spool to spool (all types)
- Epson MX-80 and compatibles
- Epson LX-80 and compatibles
- C. Itoh Prowriter and compatibles (NEC 8023A/C)
- Citizen 120 D

\$2.00/ribbon

- Epson MX-100 and compatibles

Other ribbons can be attempted, too. But if you prefer, you can buy an adapter (\$8.50 + \$3.50 shipping and handling) for the club and receive half that amount in credit towards re-inkings. See Larry Vanden Plas at the SPACE meeting, or Bob Floyd or Bruce Haug at the MAST meeting. Please pay in advance and be sure to have your ribbon(s) in a plastic bag.

From ANTIC Online
Reprinted by Permission

XEP80 (80-column card)
Atari Corp.
1196 Borregas Avenue
Sunnyvale, CA 94086
(408) 745-2000
\$79.95, 16K disk

It's here. Arriving at Antic just as we were about to go to press, the long-promised XEP80 80-column box is being manufactured at the Atari Corp.'s Taiwan manufacturing center and should be available in stores for \$79.95 by the time you read this. The XEP80 displays 80 columns and 24 rows of readable text on your screen. On monochrome monitors, this text is razor-sharp. It's also quite readable on a color monitor, though naturally the characters are smaller than standard 40-column Atari text. Either way, the XEP80 is far superior to any software-only commercial products that produce an 80-column display.

COMPATIBLE SOFTWARE

According to John Skruch, Atari's Associate Director for Software, AtariWriter 80 -- a new 80-column upgrade of the AtariWriter Plus word processor -- was undergoing final testing at deadline and should also be in the stores when the XEP80 arrives in June 1987.

AtariWriter 80 and a new 80-column, single-density version of Atari's Silent Butler personal finance program will be the first commercial software that runs on the XEP80. However, early prototype versions of the XEP80 box were sent to major publishers of 8-bit software -- such as Batteries Included, Broderbund, XEnt and OSS -- with the expectation that existing products will soon be updated for 80 columns.

Inexpensive 80-column trade-up prices for users of the existing AtariWriter Plus and Silent Butler will be offered by Atari, according to Skruch. But no prices for the software have been set as of this writing.

USING XEP80

The XEP80 is about the size of a 1030 modem (5 3/8 x 9 1/4 x 1-3/8 inches) and weighs in at two pounds. It can easily fit atop your disk drive. The XEP80 connects to your Atari through either joystick port 1 or 2. An XL/XE RCA-jack video cable carries the signal from the back of the XEP80 to your monitor. (Atari says the XEP80 display will not be satisfactory on a television set.) Keeping the system running is a small 9-volt power supply, the same power unit used with the 2600 videogame system and the still-awaited Atari 1200-baud modem. Note: The power supply that came with our prototype XEP80 tended to grow unusually hot.

The XEP80 also includes a parallel printer port that uses the same 25-pin cable as the ST. If you hold down the [SELECT] key when you boot your computer, the XEP80 will serve only as a parallel printer interface -- without turning on the 80-column display.

UTILITIES AND DEMOS

The disk that comes with the XEP80 contains the AUTORUN.SYS file which installs the handler (which is only about 200 bytes). Commented MAC/65-compatible source code for the handler is also included. Atari's Lane Winner is credited as the main designer of the XEP80 system. The disk also features a number of impressive demonstration programs written in BASIC and assembly language, as well as detailed documentation and utility software for inserting 80-column handler routines into your own programs.

The XEP80 handler introduces several new commands to Atari BASIC. These take the form of XIO statements which:

- Invert the screen colors (default is white text on a black background).
- Enable underlining.
- Produce a blinking cursor.
- Mix double-width or double-height text with standard-size text.
- Mix blinking text (any width or height) with standard text.
- Enable character-by-character horizontal scrolling with a POSITION statement and an XIO statement.

The XEP80 is immediately compatible with all software that supports E: calls -- such as Atari BASIC (versions A, B and C) and Atari DOS 2.5. During our tests, the XEP80 didn't work with DOS 2.0.

GRAPHICS

Built into the XEP80 is 8K of static RAM, which is used as a screen storage buffer to operate the display faster. The XEP80 has two complete character sets built in, the standard XL/XE special character set and Atari's international character set. The XEP80 can draw high-resolution bit-mapped graphics covering as much as half the screen. However, the 80-column drawing routines are much slower than standard 40-column drawing. It took five minutes to draw and fill a golfball-sized circle in Graphics 8.

Drawing isn't simple either. The PLOT and DRAWTO statements are not supported and text windows are not allowed. If your program crashes in the middle of one of these lengthy and complicated bit-map operations, the display remains in bit-mapped mode. You must reboot and start again.

SUMMARY

If you're serious about an 80-column display, the XEP80 won't disappoint you. The text is outstanding on monochrome monitors and acceptably readable on composite color monitors. Beginning and intermediate BASIC programmers will want to explore new ways to use the XEP80's additional XIO commands. Advanced BASIC and assembly language programmers will enjoy adapting the XEP80 handler to their favorite business software, word processor or telecommunications program.

One Meg Memory Upgrades
For the Atari 520ST

by "Unknown"

The following comments are based solely on personal observation and do not represent an in-depth engineering evaluation of memory expansion boards for the 520ST.

Over the last four months I have collected information on three memory expansion boards for the ST, prior to purchasing one for my own use. Each has its strong points, as

discussed below. Hopefully, this will help you to make a more informed decision when you decide to expand your 520ST. The three boards to be reviewed are from ThoughtSpace, AERCO, and Terrific Peripherals. All provide utilities on disk for checking your memory upgrade after installation.

THOUGHTSPACE DOUBLETHINK (TS1A) - Without a doubt, this is the most professionally promoted and detailed memory expansion of the three discussed here. All requests for information were promptly answered and neatly typewritten. For \$1.00 they will send you a copy of their 25 page installation guide. Installation requires removal of two IC's and several resistors, as well as cutting of selected circuit traces. The instructions are detailed and well illustrated. This is not for amateurs. The board then installs in the desoldered holes left from the IC's removal. This is a direct link to the motherboard, unlike the other expansion kits, which use ribbon cables. The memory board sits approximately in the same area as the space bar on the keyboard, completely under the RF shield. The idea is to leave plenty of space for the blitter chip, RF modulator and other add-ons which may be provided at a later date by Atari. ThoughtSpace claims that their board results in a system which is electronically identical to the 1040ST. For an additional \$20, ThoughtSpace will install the expansion board for you. ThoughtSpace retails for \$165. Last January, they ran a special at \$149. Doublethink has a 1 year warranty. Shipping for Doublethink costs \$3, \$5, or \$13, depending on whether you want regular UPS service, two day, or next day delivery. Shipping for the 520ST is \$6, \$16, or \$25 for similar UPS services. ThoughtSpace Development's address is 2450 Warring St., No.21, Berkeley, CA, 94704. Phone:(415)845-1415.

AERCO easiST - This is the most flexible board in terms of future memory upgrades. The basic board supplies an additional 512K RAM for the ST, with room for up to 4 megabytes total memory. 2.5 meg of memory can be installed without modification to the board other than adding 16 1 meg RAM chips and sockets. Upgrades to 4 megabytes requires some soldering and cutting on the expansion board. Since 1 meg chips are approximately \$30 for the general public, upgrading past 1 meg is currently a very expensive option. Hopefully by next year the price of chips will have dropped to around \$5 or so. Promotional materials for the AERCO board are professional, though not as detailed as ThoughtSpace. The eight page installation guide is concise and clearly illustrated. Installation requires removal of the MMU chip. This is the trickiest part of the procedure, since you need two jeweler's type precision screwdrivers to pry the chip out of its socket. If you're not careful, you can crack the socket and/or the chip. The MMU chip is reinstalled in a special MMU adapter socket, which is then plugged into the MMU socket on the motherboard. Two pressure-type pin connectors install over two data buffer chips. While the MMU connector is very solid, the pin connectors appear less so. AERCO provides a special string for tying around the connectors to strengthen the fit, though they suggest that it is not necessary for dependable use. Ribbon-type cables run from the connectors to the expansion board. The board sits on the upper left corner of the motherboard, under the RF shield. One major advantage of this installation is that if you should develop problems with the expansion board or chips in the future, you can easily deinstall the board and still have a working computer while the board is being repaired. A note of caution: the board covers ROM chip number 1, which is the installation point for the some clock chips. Both the memory board and clock chip will not fit under the RF shield. Terrific Peripherals sells a cable adapter which is designed to relocate ROM number 1 and allow simultaneous use of both the memory expansion and clock. TP originally designed the cable to be used in the 1040ST, with their clock chip, since ROM number 1 on the 1040 is under the power supply. List price for the AERCO board is \$189. For an additional \$20, they will preinstall 20 more sockets which will simplify future upgrades to 2.5 megabits. If just the thought of opening the case of your ST gives you the shivers, AERCO will install the board for a fee of \$25. There is no charge for UPS ground shipping, \$5 for two day, and \$12 for

next day air. They did not quote shipping prices for the 520ST, but they are probably comparable to the ThoughtSpace quotes. AERCO supports a 1 year warranty. AERCO's address is Box 18093, Austin, TX 78760. Phone:(512)451-5874.

TERRIFIC PERIPHERALS EZ-RAM - TP says they've sold thousands of their boards over the last year. They were one of the first on the market. Installation is the easiest of the three. A special MMU socket adapter connects directly to the socket on the motherboard without removal of the MMU chip. A ribbon cable connects to the memory expansion board. The video chip is removed from the motherboard and reinstalled on the EZ-RAM board. Instructions are printed on a single large page which folds out to cover your work area while you follow the easy to read diagrams and notes. The illustrations are clear and professionally drawn. EZ-RAM sits over the video chip socket under the RF shield. This leaves room for other add-ons later, such as the blitter chip or RF modulator. The video chip sits in its own RF "box", approximately under the arrow keys on the keyboard, prior to installation of the memory expansion. The top of the box is replaced by the expansion board. TP says that they have not had any problems with RF interference due to removal of the shield top and relocation of the video chip. EZ-RAM has a 6 month warranty and retails for \$199, though I found it for \$159 mail order at the Atari Station (800)-225-5878. Terrific Peripherals' address is 17 St. Mary's Court, Brookline MA, 02146. Phone: (617)-232-2317.

SO WHICH ONE DID I BUY? - I bought the AERCO board and installed it in approximately an hour. It would have taken less time, but I fiddled around trying to get the Z-Time clock chip to fit as well. AERCO has started using an improved MMU adapter which made installation fairly painless. In fact actual installation was anticlimatic after waiting the two weeks it took to get my board: AERCO is running about 7-10 days backlog on orders. However, with some new production techniques, they expect to reduce that in the near future. The board survived a 12 hour "burn-in" while running diagnostics, without error. My reasons for choosing the AERCO board are personal and based on intuitive reasoning, which may or may not be the best overall solution. I'm not expert enough to attempt the ThoughtSpace installation and I'm unwilling to give up my ST for even a few days. I have few doubts that I'll want to upgrade to 2.5 Meg when it's more economical - simply because it's there. As for installation approach, the AERCO board appears to be a reasonable compromise between the more complex DoubleThink and the simple EZ-RAM, in terms of how one plugs into the necessary data lines to provide the additional memory. The 1 year warranty is also a big plus for me. All three vendors were very helpful and sincerely enthusiastic about their technical approach and the 520ST over the telephone. Unfortunately, I have been unable to make the Terrific Peripherals clock chip work with the cable adapter which they sell for the 1040ST: I kept getting buss errors. I guess I'll have to settle for an external clock, or find out who manufactures clock chips which fit over other chips. The TP clock is nice since it keeps track of leap years, which some clocks do not.

Now all I have to do is figure out what to do with all that memory. With visions of ramdisks and large VIP spreadsheets dancing in my head, I'm sure I have a good start.

One final note: for those of you who have had printing problems with Dollars and Sense, all of my problems were solved with the memory expansion. Hopefully Monogram will squeeze DAS down in the near future. For those of you who are as impatient as I, I recommend an expansion board.

ANTIC PUBLISHING INC., COPYRIGHT 1987.
REPRINTED BY PERMISSION.

CEBIT '87 ST REPORT
PART #1: HARDWARE
-- EXCLUSIVE TO ANTIC ONLINE--
BY CHRISTIAN SCHMITZ-MOORMANN
APRIL 4, 1987

What is CeBIT?

The CEBIT fair at Hanover supposedly is the world's largest show in bureau and information electronics. CEBIT stands for: Computer, Electronics, Bureau, Information and Telecommunication. On an area of more than 205,000 square meters in 12 halls more than 2200 firms showed their products. This year's show had snowstorms causing chaotic traffic situations so even the usually reliable Bundesbahn (federal train service) had delays of up to 6 hours. For this reason the show was nicknamed 'Schnee-BIT' (Schnee is German for snow). But anyway, though we arrived late, we finally got there and it became a very interesting day.

HARDWARE...

ATARI presented itself in its newly adopted white-and-blue look and on 50 1040's the software-houses presented their new products. Before looking at the software I was pulled to the new MEGA-STs and that experience was great. The design was appealing and the keyboard a lot better than my 1040's. Helas, the MEGAs won't hit the stores before May or even June due to a slight timing- problem with the shifter-chip. This error results in small vertical black lines on the display. The delay in the MEGAs will probably also affect the PC since ATARI said they would only put out the PC after the MEGAs to show their preferences. But with Jack Tramiel one never can be certain. The last all new product was the laser printer. Connected to one of the MEGAs it was turning out page after page. The quality was as can be expected from such a machine. The printer emulates a Diablo 630 and supports GDOS. According to a German ATARI-representative they are working on post-script.

Naturally ATARI was not the only to show new products. On the hardware side there was also HEISE, a German publishing-house, that showed its new version of the real-time language PEARL/RTOS system which was developed at Hanover university. It was simultaneously showing a graphic (a more sophisticated version of the only too-well-known jumping-ball) and controlling a robot that balanced a glass of water.

BASIS-0, who formerly built APPLE compatibles, showed an interesting new integrated scanner-printer/plotter and telecopier. Within 4 minutes it is possible to send or receive a letter in handwriting or with graphics on any public or private telephone. The device incorporates an acoustic coupler and can be run on rechargeable batteries. The resolution is 4096 pixels per line and 1125 lines per page.

PRINT-TECHNIK presented its 3rd-generation digitizers. Their new Realtizer digitizes a picture with up to 16 gray-levels in less than one second. It now plugs into the ROM-port. Its big brother, the PRO 87, digitizes 1024 pixels in 512 lines and 128 gray-levels. Both digitizers come with a toolbox-software and the PRO 87 also includes the necessary hardware for real-color images. PRINT-TECHNIK also offers a Genlock-interface for the ST. Other products are a Meteosat weather satellite receiver, a sound digitizer and a memory-oscilloscope.

GTI, a Berlin-based society, presented a VMEbus-interface that plugs into the DMA-port and includes a full bus-arbitration-logic and supports interrupts. The DMA-port is pulled through so that a hard-disk can still be used.

Another bus that opens your ATARI is produced by RHOTRON. It is plugged onto the CPU and has eight slots. Since installing the bus voids the warranty RHOTRON also offers a PC-like case in

which the ST and the bus and a stronger power supply are incorporated. Rhotron offers several cards to fill the slots, from 2-Meg RAM to multifunction-cards they have just about everything, or how about a math-coprocessor?

A barcode-reader can be obtained from CDS in Freiburg/Rhine valley. Barcodes invade our lives, they tell you what is in a specific product, which film you just rented and with such a reader you can find out yourself.

LINDY, a maker of printer-cables and other computer add-ons also presented an oscillograph. It can be used as a sound-sampler or as a digital oscilloscope.

The last interesting hardware I wish to present was not on the show, but since Desktop Publishing is becoming more and more important, I feel it should be mentioned.

HEIM-Verlag, another young publishing house, that was the first in Germany to have a magazine purely dedicated to the ST-line (STcomputer-mag), offered a program and interface to connect an ST to a CompuGraphic-MCS-layout station called 'transmit'. They use it to make their magazine. And as far as I can tell it seems to work pretty well.

Newsletter Advertising Rates:

1/4 page - 4.25" horizontally x 5.5" vertically - \$ 5.50
1/2 page - 8.5" x 5.5" - \$10.00
Full page - 8.5" x 11" - \$18.00

Send to: Bob Floyd
955 Connor Avenue East
Maplewood, MN 55109

ONE MEGABYTE FOR YOUR 520ST

 **ATARI**
520ST™
COMPUTER

- ONE DAY SERVICE
- LOANER OR RENTAL 520ST
- 520ST COLOR SYSTEM WITH 1 MEGABYTE RAM INSTALLED \$979 (IN STOCK)
- 520ST MONO SYSTEM WITH 1 MEGABYTE RAM INSTALLED \$779 (IN STOCK)
- 1 MEGABYTE BOARD UPGRADE (INSTALLED) \$179
- 1 MEGABYTE PIGGY BACK UPGRADE (INSTALLED) \$119
- 2 OR 4 MEGABYTE CUSTOM UPGRADE (CALL)
- 30 DAY WARRANTY ON UPGRADES
- TALK TO DAVE OR SCOTT

LR DATA, INC.

REGULAR BUSINESS LINE: (612) 770-2447
CALL THE LR DATA BBS: (612) 777-6376

St. Paul ATARI Computer Enthusiasts (SPACE)

Bruce Haug, President

1697 East Hoyt Avenue

St. Paul, MN 55106

Phone: (612) -774-6226